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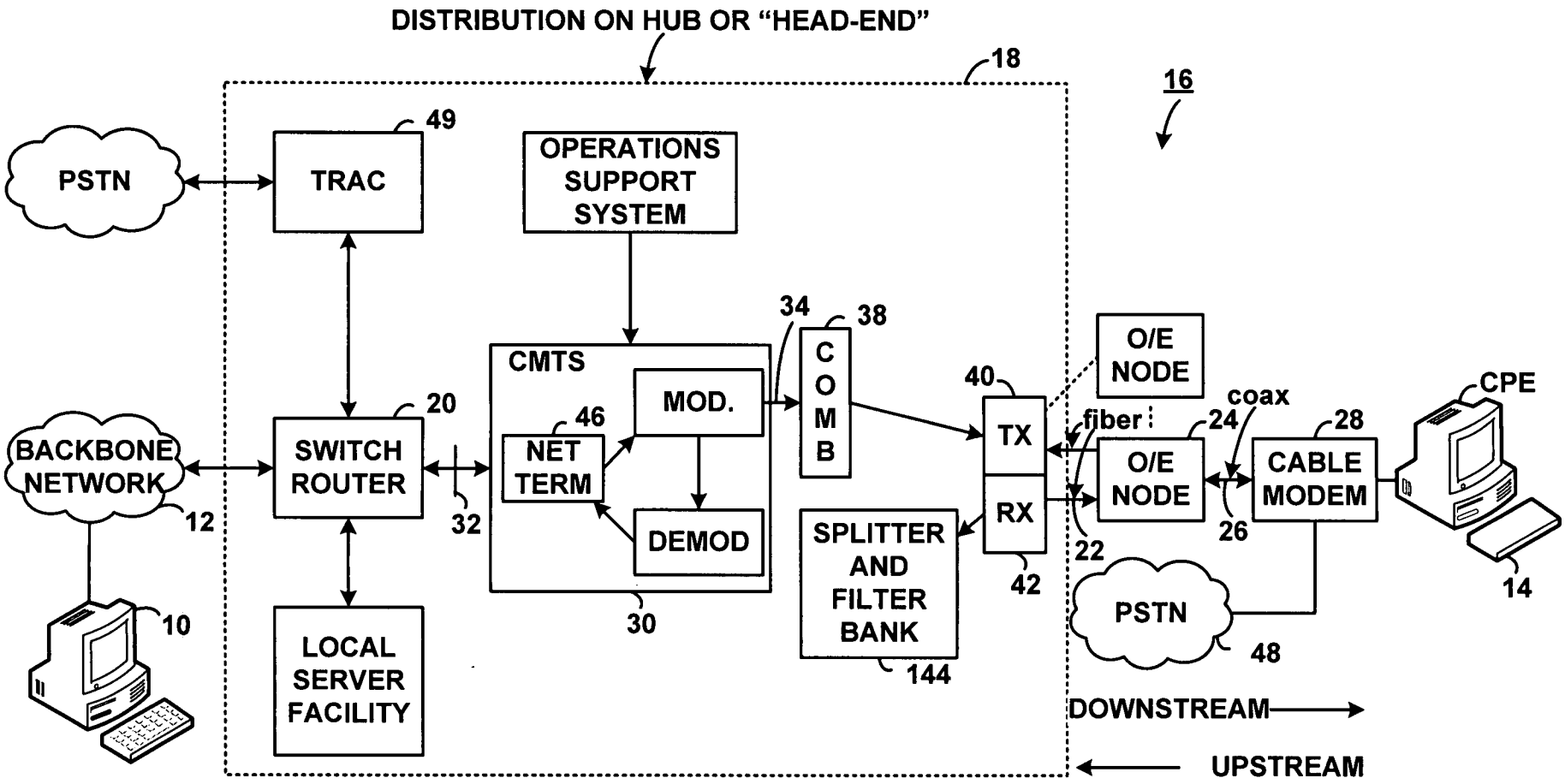


FIG. 1

FIG. 2

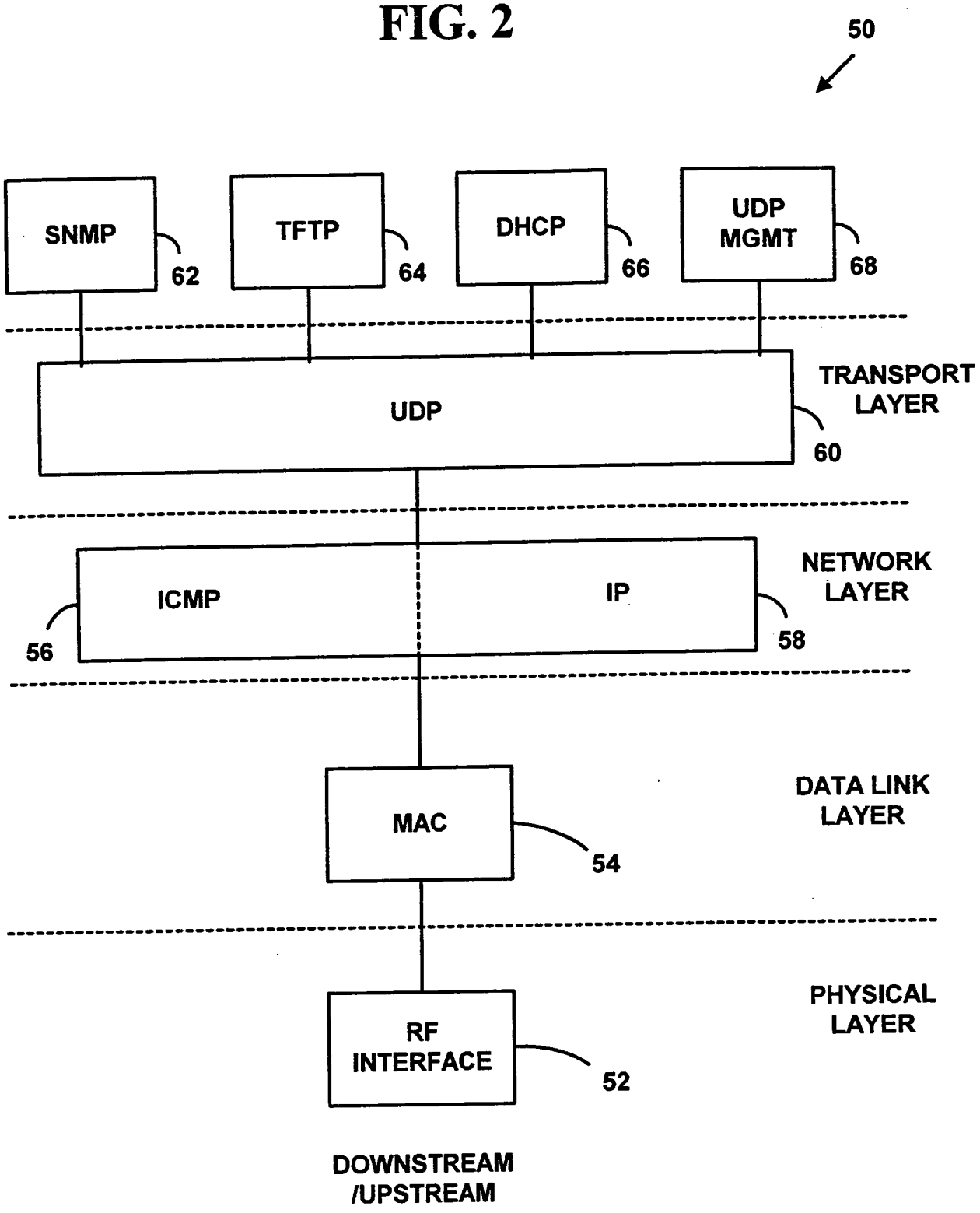

50
SNMP
62
TFTP
64
DHCP
66
UDP MGMT
68
UDP
60
TRANSPORT LAYER
ICMP
56
IP
58
NETWORK LAYER
MAC
54
DATA LINK LAYER
RF INTERFACE
52
PHYSICAL LAYER
DOWNSTREAM /UPSTREAM

FIG. 3

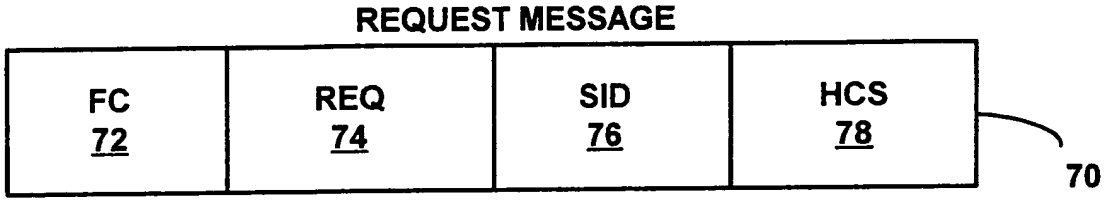

REQUEST MESSAGE
FC
72
REQ
74
SID
76
HCS
78
70

FIG. 4

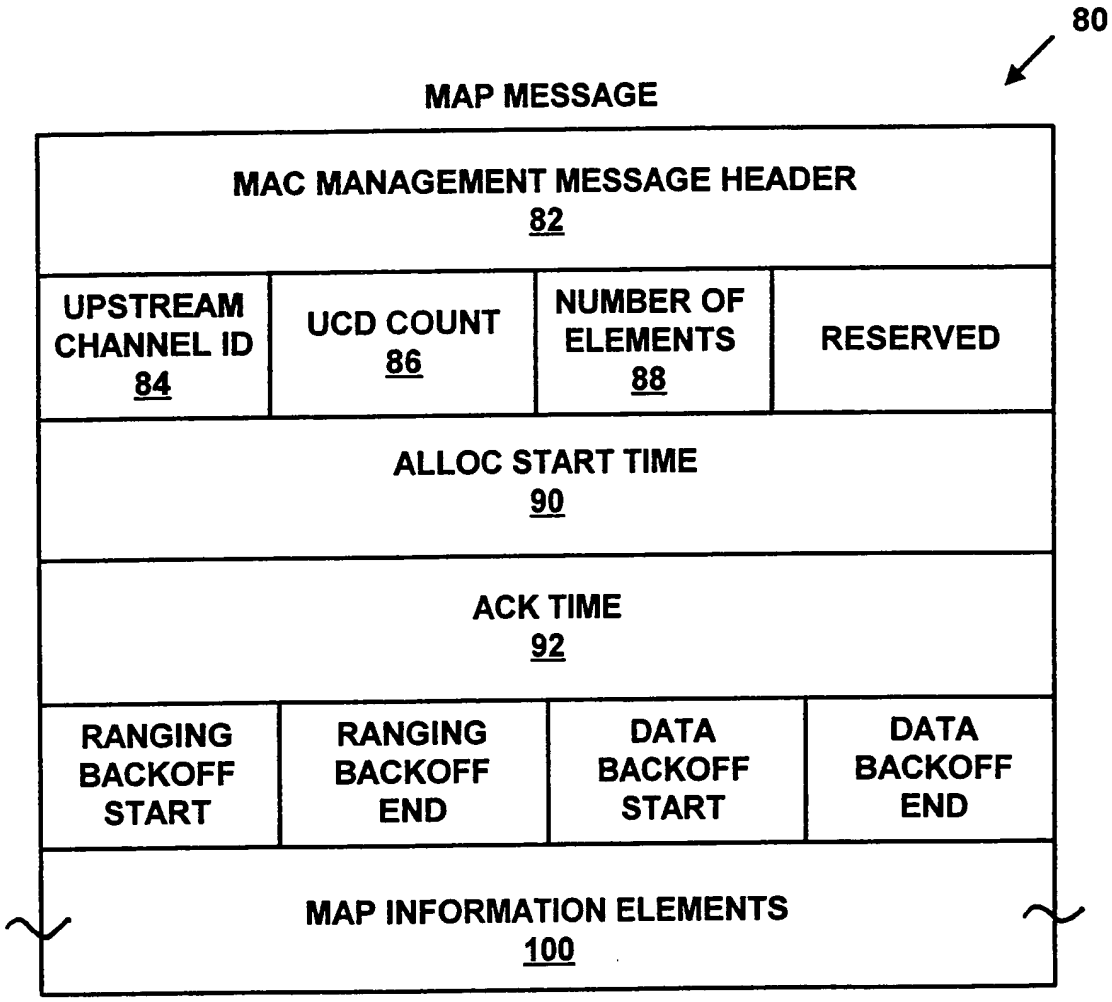

80
MAP MESSAGE
MAC MANAGEMENT MESSAGE HEADER
82
UPSTREAM CHANNEL ID
84
UCD COUNT
86
NUMBER OF ELEMENTS
88
RESERVED
ALLOC START TIME
90
ACK TIME
92
RANGING BACKOFF START
RANGING BACKOFF END
DATA BACKOFF START
DATA BACKOFF END
MAP INFORMATION ELEMENTS
100

FIG. 5

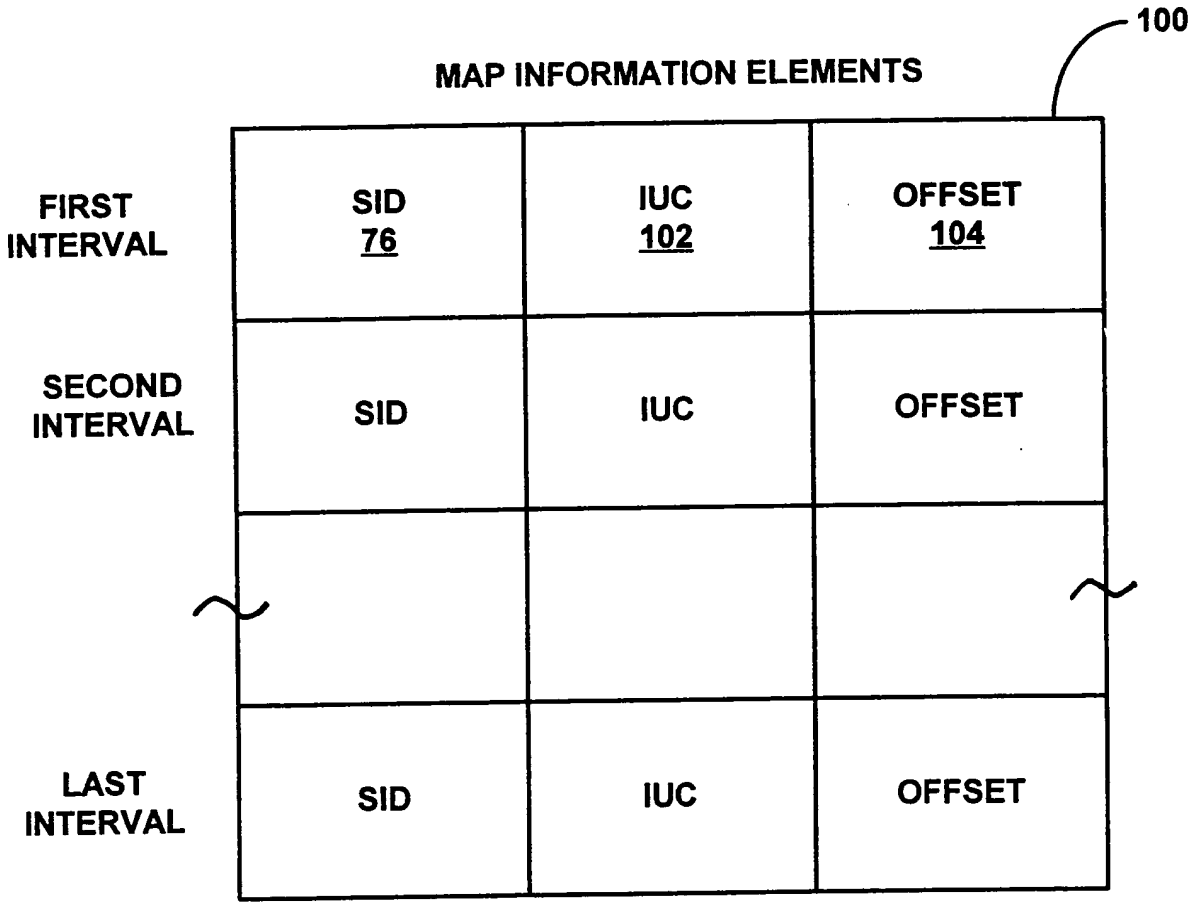

100
MAP INFORMATION ELEMENTS
FIRST INTERVAL
SECOND INTERVAL
LAST INTERVAL
SID 76
IUC 102
OFFSET 104
SID
IUC
OFFSET
SID
IUC
OFFSET

FIG. 6

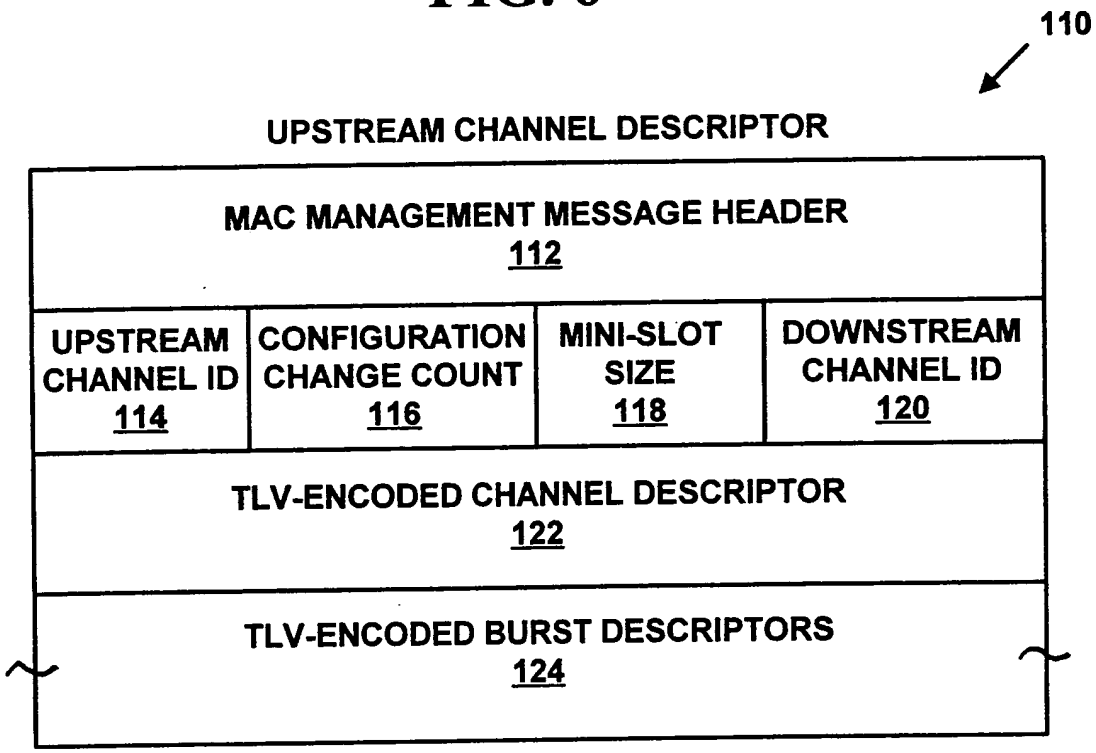

110
UPSTREAM CHANNEL DESCRIPTOR
MAC MANAGEMENT MESSAGE HEADER
112
UPSTREAM CHANNEL ID
114
CONFIGURATION CHANGE COUNT
116
MINI-SLOT SIZE
118
DOWNSTREAM CHANNEL ID
120
TLV-ENCODED CHANNEL DESCRIPTOR
122
TLV-ENCODED BURST DESCRIPTORS
124

FIG. 7

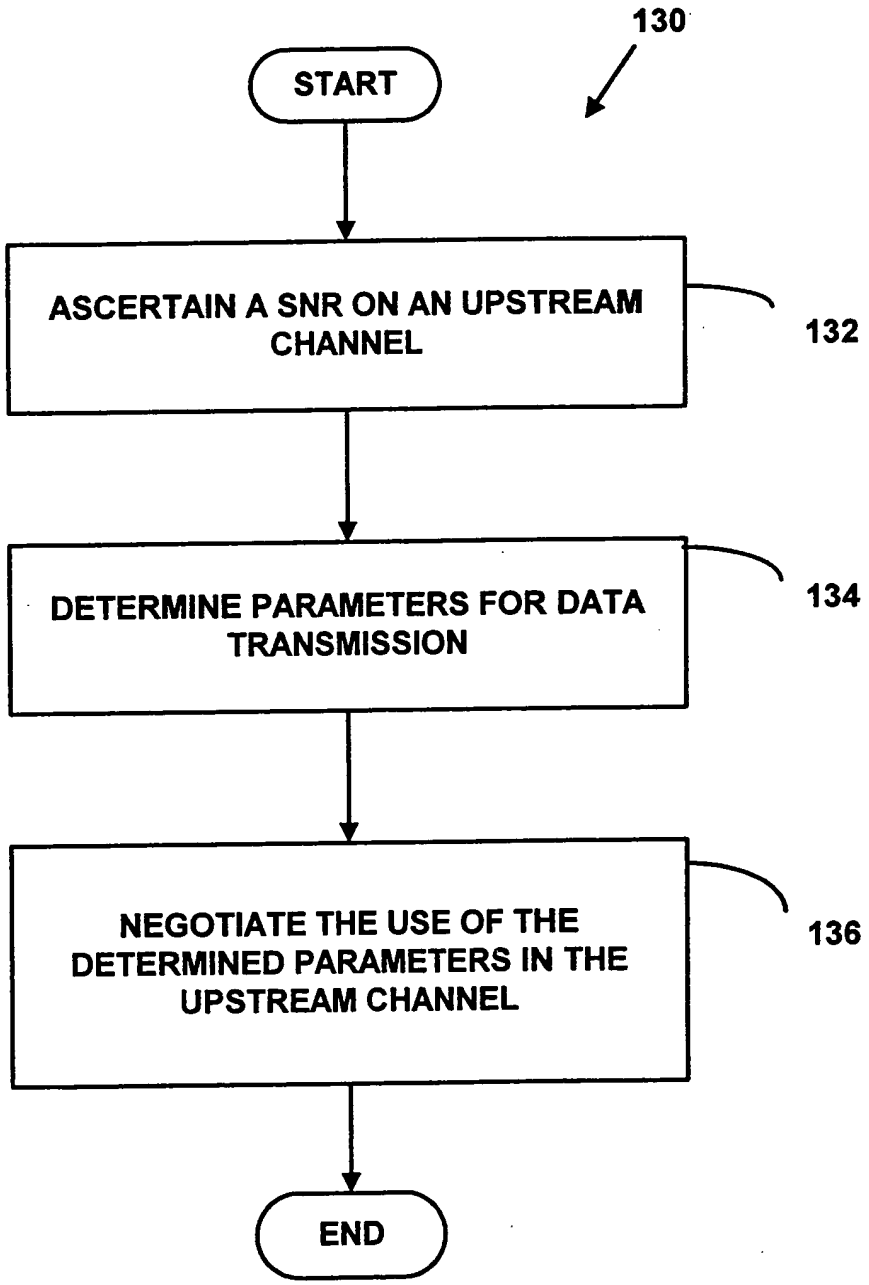

130
START
ASCERTAIN A SNR ON AN UPSTREAM CHANNEL
132
DETERMINE PARAMETERS FOR DATA TRANSMISSION
134
NEGOTIATE THE USE OF THE DETERMINED PARAMETERS IN THE UPSTREAM CHANNEL
136
END

FIG. 8A

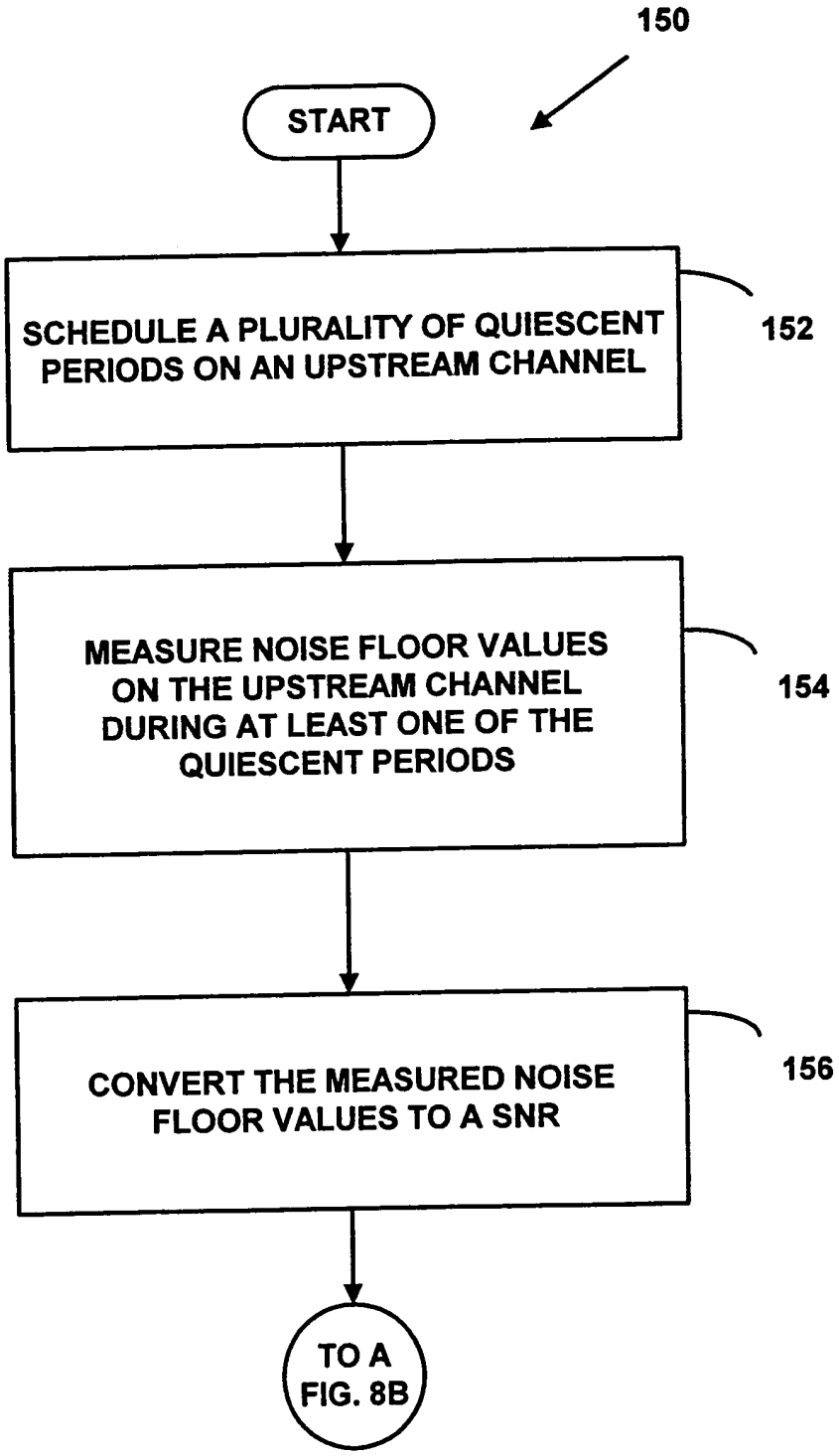

150
START
SCHEDULE A PLURALITY OF QUIESCENT PERIODS ON AN UPSTREAM CHANNEL
152
MEASURE NOISE FLOOR VALUES ON THE UPSTREAM CHANNEL DURING AT LEAST ONE OF THE QUIESCENT PERIODS
154
CONVERT THE MEASURED NOISE FLOOR VALUES TO A SNR
156
TO A FIG. 8B

FIG. 8B

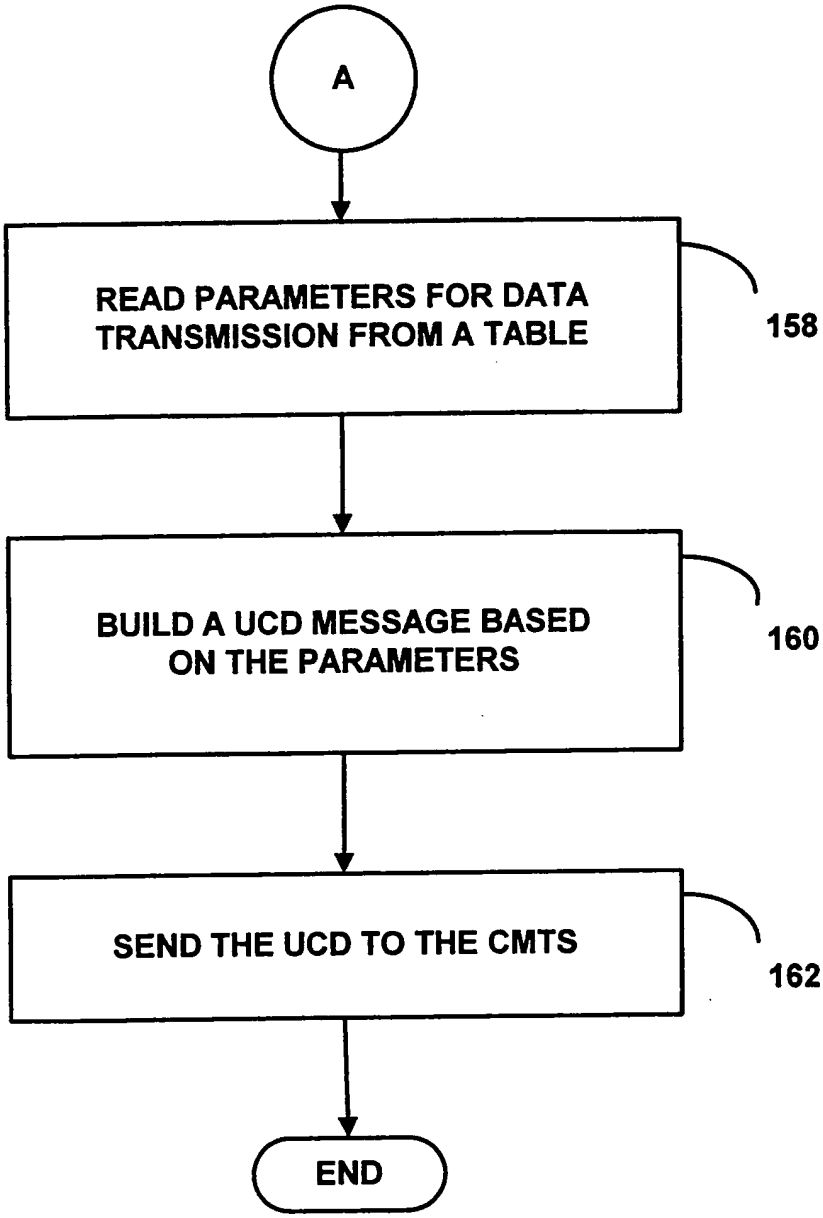

A
READ PARAMETERS FOR DATA TRANSMISSION FROM A TABLE
158
BUILD A UCD MESSAGE BASED ON THE PARAMETERS
160
SEND THE UCD TO THE CMTS
162
END

FIG. 9

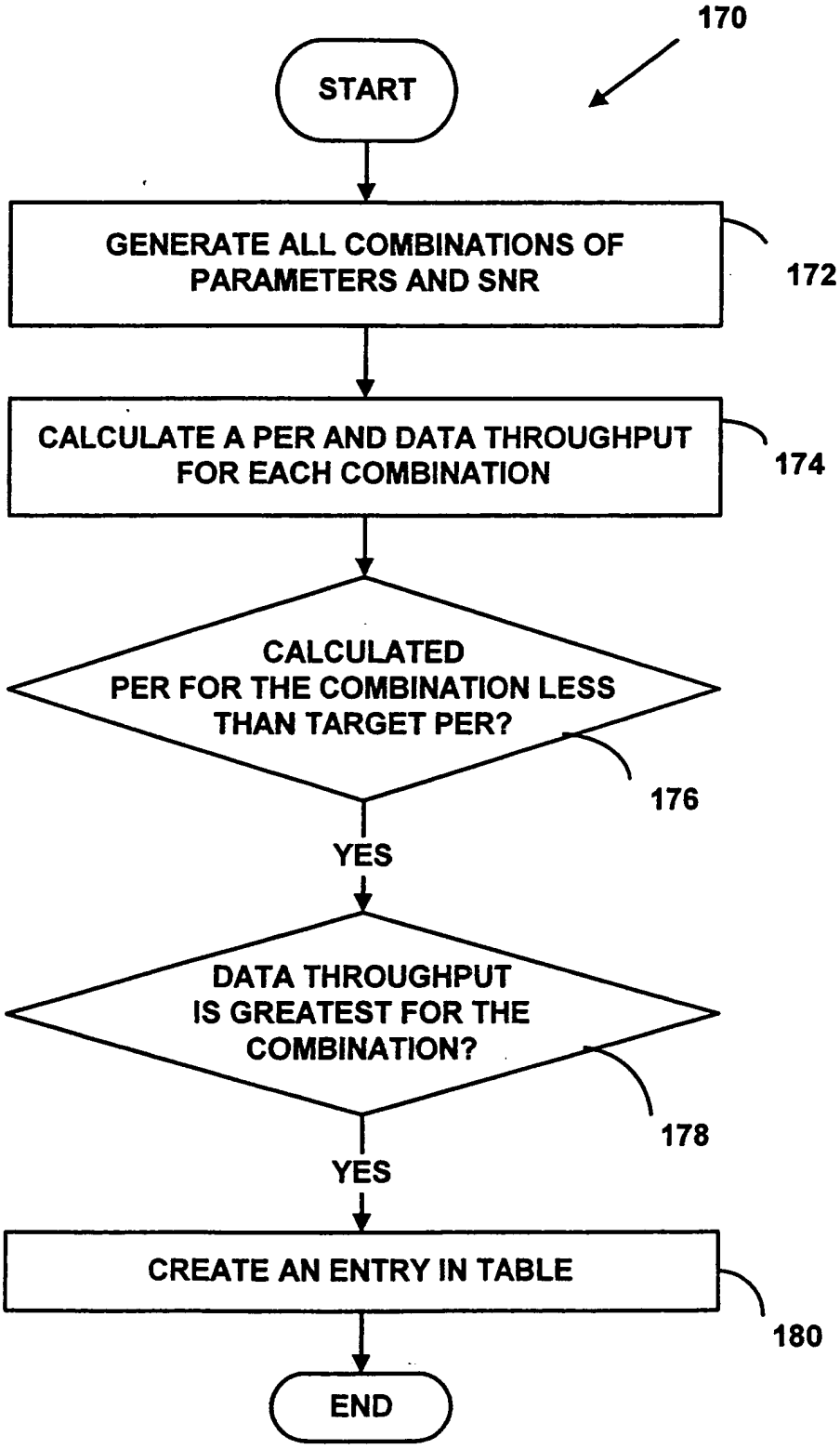

170
START
GENERATE ALL COMBINATIONS OF PARAMETERS AND SNR
172
CALCULATE A PER AND DATA THROUGHPUT FOR EACH COMBINATION
174
CALCULATED PER FOR THE COMBINATION LESS THAN TARGET PER?
176
YES
DATA THROUGHPUT IS GREATEST FOR THE COMBINATION?
178
YES
CREATE AN ENTRY IN TABLE
180
END

FIG. 10A

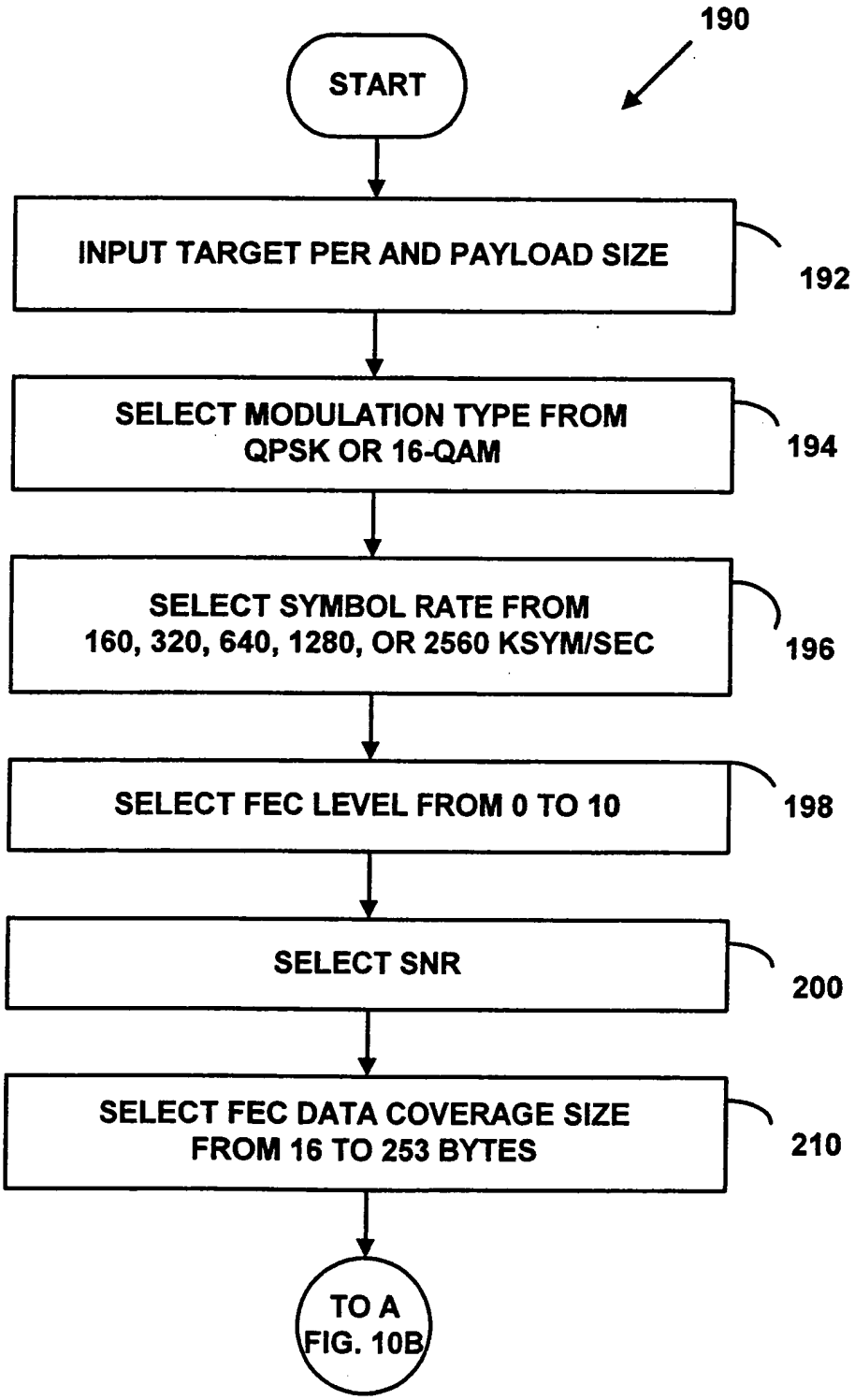

190
START
INPUT TARGET PER AND PAYLOAD SIZE
192
SELECT MODULATION TYPE FROM QPSK OR 16-QAM
194
SELECT SYMBOL RATE FROM 160, 320, 640, 1280, OR 2560 KSYM/SEC
196
SELECT FEC LEVEL FROM 0 TO 10
198
SELECT SNR
200
SELECT FEC DATA COVERAGE SIZE FROM 16 TO 253 BYTES
210
TO A FIG. 10B

FIG. 10B

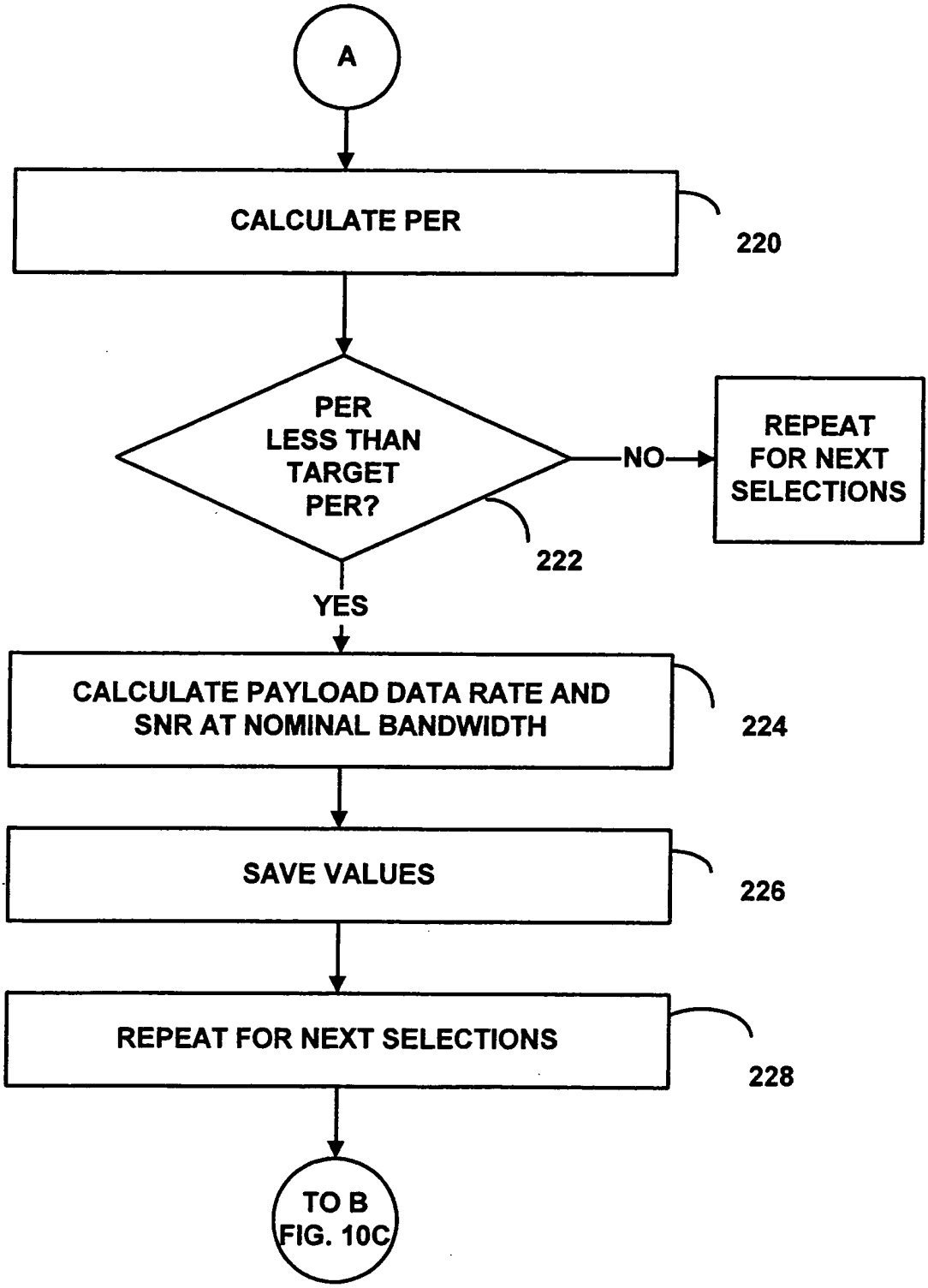

A
CALCULATE PER
220
PER LESS THAN TARGET PER?
NO
REPEAT FOR NEXT SELECTIONS
222
YES
CALCULATE PAYLOAD DATA RATE AND SNR AT NOMINAL BANDWIDTH
224
SAVE VALUES
226
REPEAT FOR NEXT SELECTIONS
228
TO B FIG. 10C

FIG. 10C

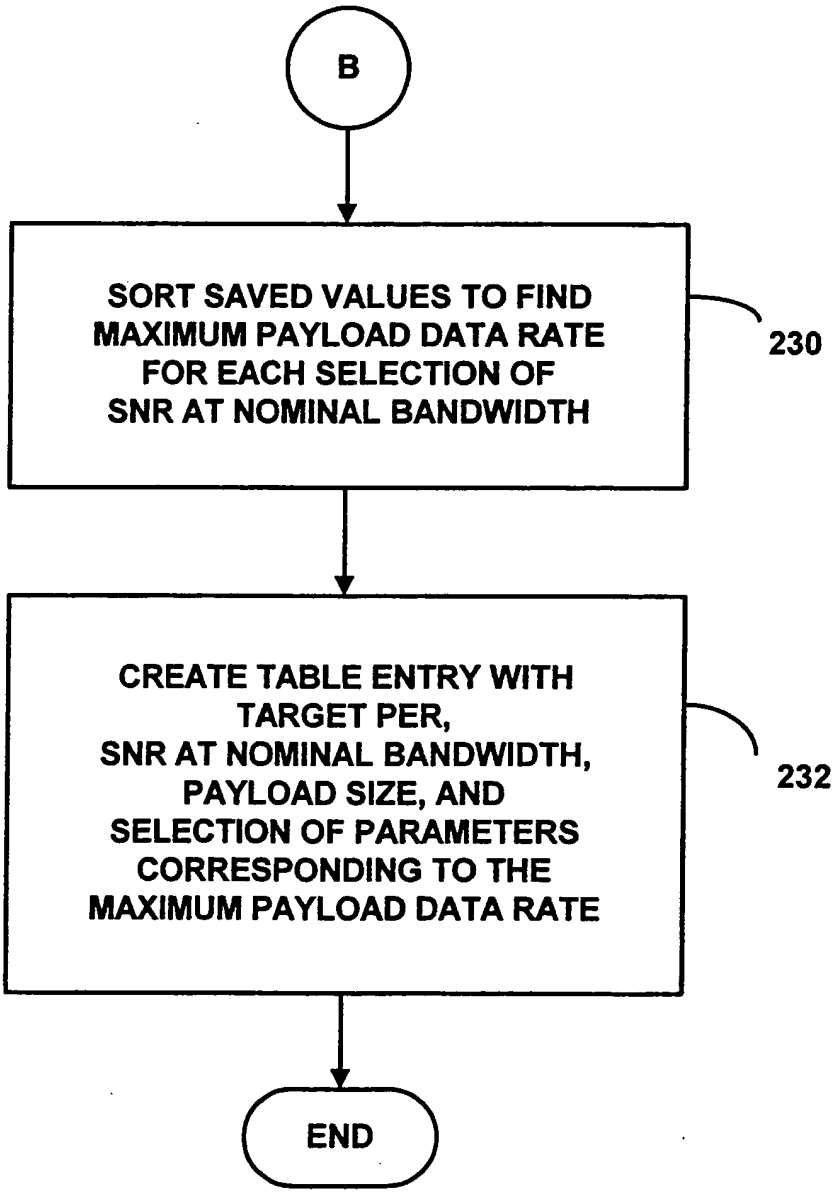

B
SORT SAVED VALUES TO FIND MAXIMUM PAYLOAD DATA RATE FOR EACH SELECTION OF SNR AT NOMINAL BANDWIDTH
230
CREATE TABLE ENTRY WITH TARGET PER, SNR AT NOMINAL BANDWIDTH, PAYLOAD SIZE, AND SELECTION OF PARAMETERS CORRESPONDING TO THE MAXIMUM PAYLOAD DATA RATE
232
END

FIG. 11

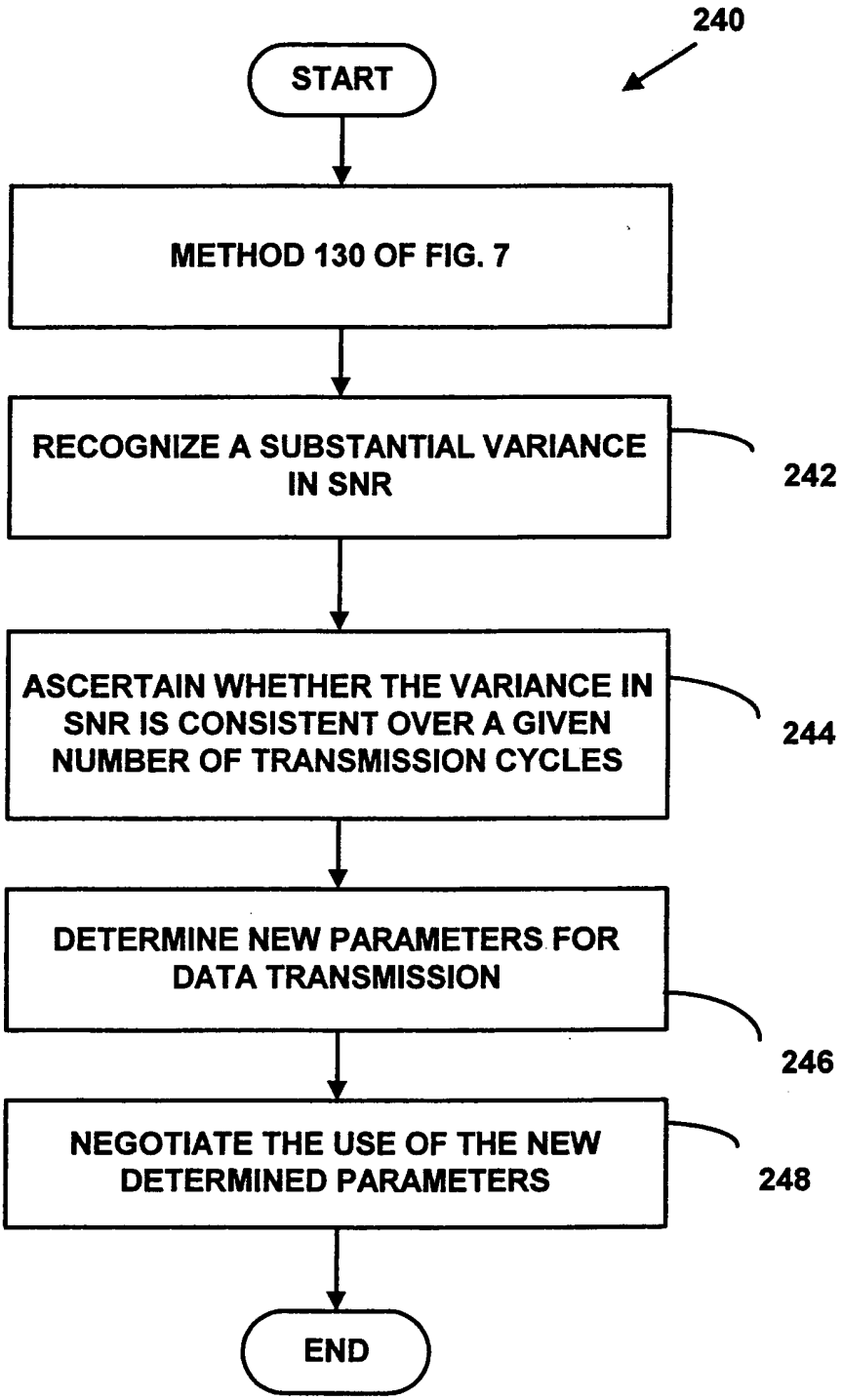

240
START
METHOD 130 OF FIG. 7
RECOGNIZE A SUBSTANTIAL VARIANCE IN SNR
242
ASCERTAIN WHETHER THE VARIANCE IN SNR IS CONSISTENT OVER A GIVEN NUMBER OF TRANSMISSION CYCLES
244
DETERMINE NEW PARAMETERS FOR DATA TRANSMISSION
246
NEGOTIATE THE USE OF THE NEW DETERMINED PARAMETERS
248
END

FIG. 12

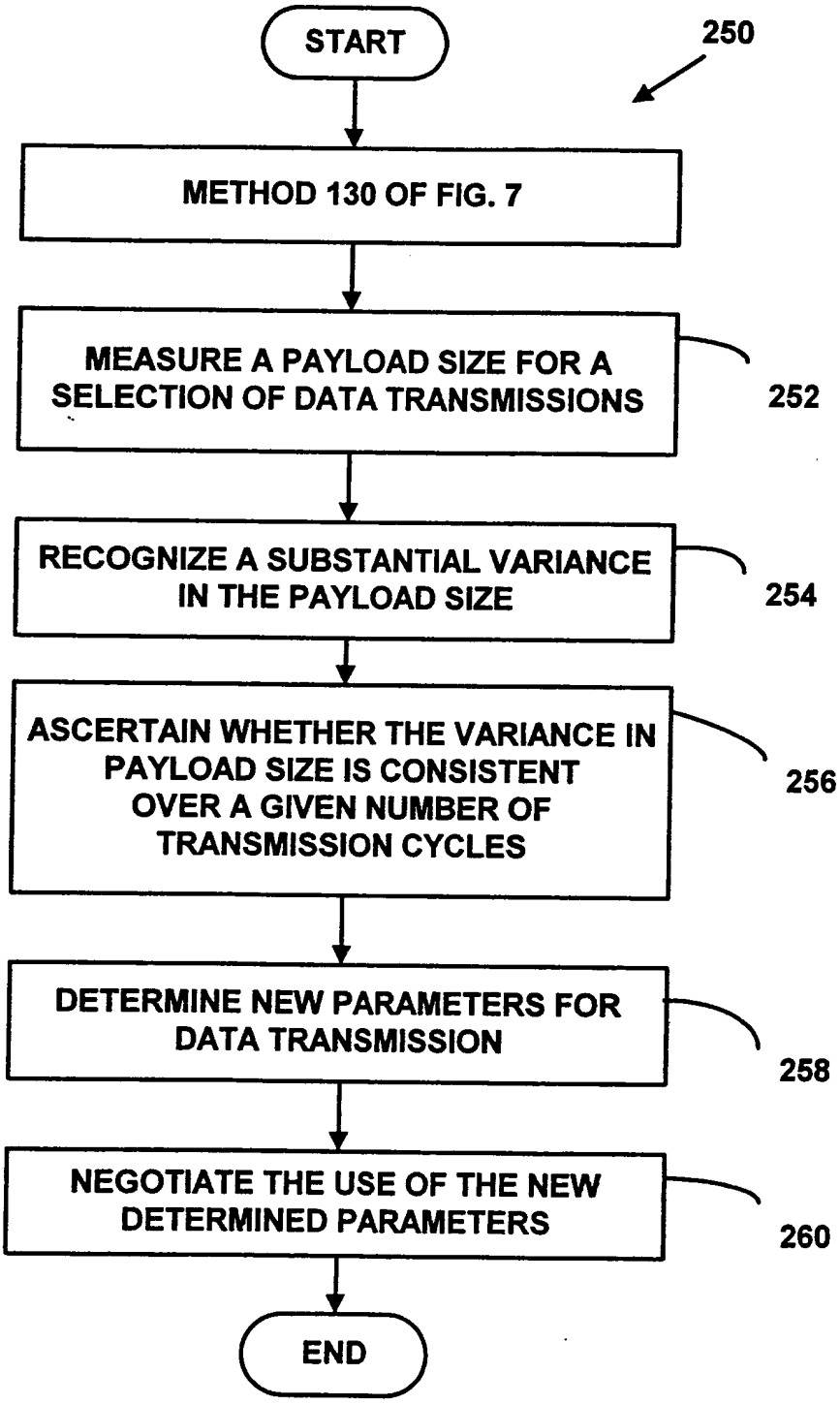
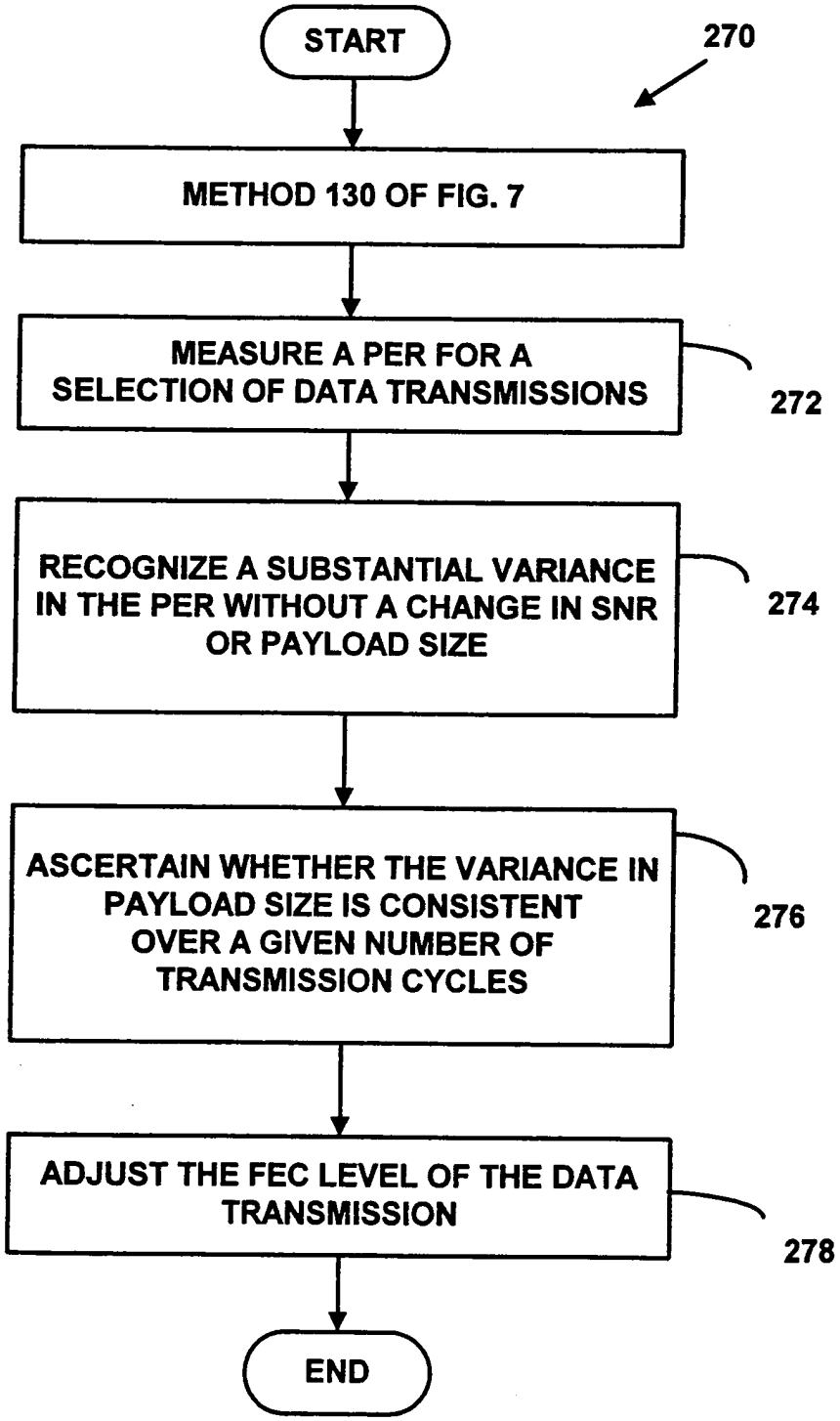

START
250
METHOD 130 OF FIG. 7
MEASURE A PAYLOAD SIZE FOR A SELECTION OF DATA TRANSMISSIONS
252
RECOGNIZE A SUBSTANTIAL VARIANCE IN THE PAYLOAD SIZE
254
ASCERTAIN WHETHER THE VARIANCE IN PAYLOAD SIZE IS CONSISTENT OVER A GIVEN NUMBER OF TRANSMISSION CYCLES
256
DETERMINE NEW PARAMETERS FOR DATA TRANSMISSION
258
NEGOTIATE THE USE OF THE NEW DETERMINED PARAMETERS
260
END

FIG. 13


START
270
METHOD 130 OF FIG. 7
MEASURE A PER FOR A SELECTION OF DATA TRANSMISSIONS
272
RECOGNIZE A SUBSTANTIAL VARIANCE IN THE PER WITHOUT A CHANGE IN SNR OR PAYLOAD SIZE
274
ASCERTAIN WHETHER THE VARIANCE IN PAYLOAD SIZE IS CONSISTENT OVER A GIVEN NUMBER OF TRANSMISSION CYCLES
276
ADJUST THE FEC LEVEL OF THE DATA TRANSMISSION
278
END